

SEMICONDUCTOR LIGHT EMITTING ELEMENT

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Abstract

PURPOSE: To manufacture the highly efficient semiconductor light emitting element over the broad wavelength region extending from visible to ultraviolet rays by a method wherein a specific layer is provided between a light emitting layer and a growing substrate.

CONSTITUTION: A specific layer represented by the formula II is provided between a light emitting layer 63 and a growing substrate 61. Next, the light emitting layer 63 having at least one layer represented by the formula I is held between n-type and p-type GaN current injection layers 62 and 64 represented by the formula III. Through these procedures, the electrons and holes injected in the light emitting layer 63 are enclosed therein without running into the current injection layer 62, 64 thereby enabling the light in high outer quantum efficiency to be emitted. That is, even if n-type and p-type current injection layers 62 and 64 are doped in high concentration of e.g. 10^{18} - 10^{19} cm⁻³, the title light emitting element having excellent current versus voltage characteristic can be manufactured without affecting the purity of the light emitting spectrum due to the distinct separation between the light emitting region 63 and the current injection regions 62, 64.

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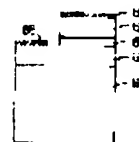
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$$\text{In}_{1-x-y}\text{Ga}_x\text{Al}_y\text{N} \ (x+y \leq 1, \ 0 \leq x, y \leq 1)$$

I

$$\text{Ga}_{1-x}\text{Al}_x\text{N} \ (0 \leq x \leq 1)$$

II

$$\text{In}_{1-x-y}\text{Ga}_x\text{Al}_y\text{N} \ (x+y \leq 1, \ 0 \leq x, y \leq 1)$$

III

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